TEST RUN

❶ **Before first turning on the power,** please check if is electric connections for the module and the outdoor unit in right order.

❷ **After switching of power,** check the indicators:

- **Module ATW-C-INV2+:** Flashing 2-color LED indicates the demand of compressor capacity and operation mode of outdoor unit - see Tab. 1.

⚠ **Error indication:** Continuous green light of 2-color LED indicates missing the communication response from the outdoor unit.

- **Outdoor unit:** If the outdoor unit is equipped by an error indication with LED lamps or alphanumeric display, check the error status if is not indicated. To decoding the errors, use the Fujitsu-General service documentation (Installation manual, Service manual, Service Instructions).

❸ **Starting the outdoor unit:**
In the case when is control signal from the master control system missing, it is possible test device by using voltage +12V from the terminal marked as +12 directly to the input ON. This can be provided by the wire jumper. The desired mode cooling/heating must be set up by input H/C. At the beginning LED of the module indicates 0% of power requirement for the compressor. After running of initialization protection delay the power demand is gradually increasing up to 100% (This interval may take up to several minutes). During this time please keep checking operation of the compressor and outdoor unit fan by hearing. After is 100% of the power reached then you can start test current of the unit and also working pressure of the refrigerant.

⚠ ***Caution!! If consumption of the heat from indoor unit is not provided (for example, if indoor heat exchanger is not connected, indoor fan or circulation pump is not running), then compressor may operate maximally 1 minute!!***

Manufacturer:
IMPROMAT KLIMA Co.Ltd. Tr. T Bati 5267, 760 01 Zlin, Czech Republic
tel.: +420 577 004 141, fax: +420 577 149, e mail: klima.sale@impromat.cz
www.impromat.cz

INSTALLATION MANUAL

Module for controlling Inverter outdoor units

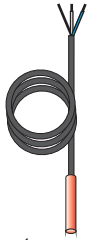
99200 ATW-C-INV2+ type AOYG
99202 ATW-C-INV2+ type AOY
99203 ATW-C-INV2+ type AOYA
99204 ATW-C-INV2+ type AOYR
99104 ATW-C-INV2+ type AOYD
99210 ATW-C-INV2+ type HP

USING

Module ATW-C-INV2+ supply direct control of Fujitsu-General-Fuji outdoor inverter units in the cases when is necessary used heat exchanger of different maker and different construction. Module ATW-C-INV2+ replaces the previous type ATW-C-INV and ATW-C-INV2, with which is backward compatible.

PACKAGE CONTENTS:

Module ATW C INV2+


Temperature sensor ETS A

This manual

MECHNICAL PLACING

Module with protection IP20 is designed for mechanical mounting on DIN rail situated inside of electrical switchboard or installation box. For outdoor environment must be used only in facilities with adequate protection. There is also possibility to locate module inside of outdoor unit (in the electrical area, but only if there is left enough space for installation).

ELECTRICAL CONNECTING

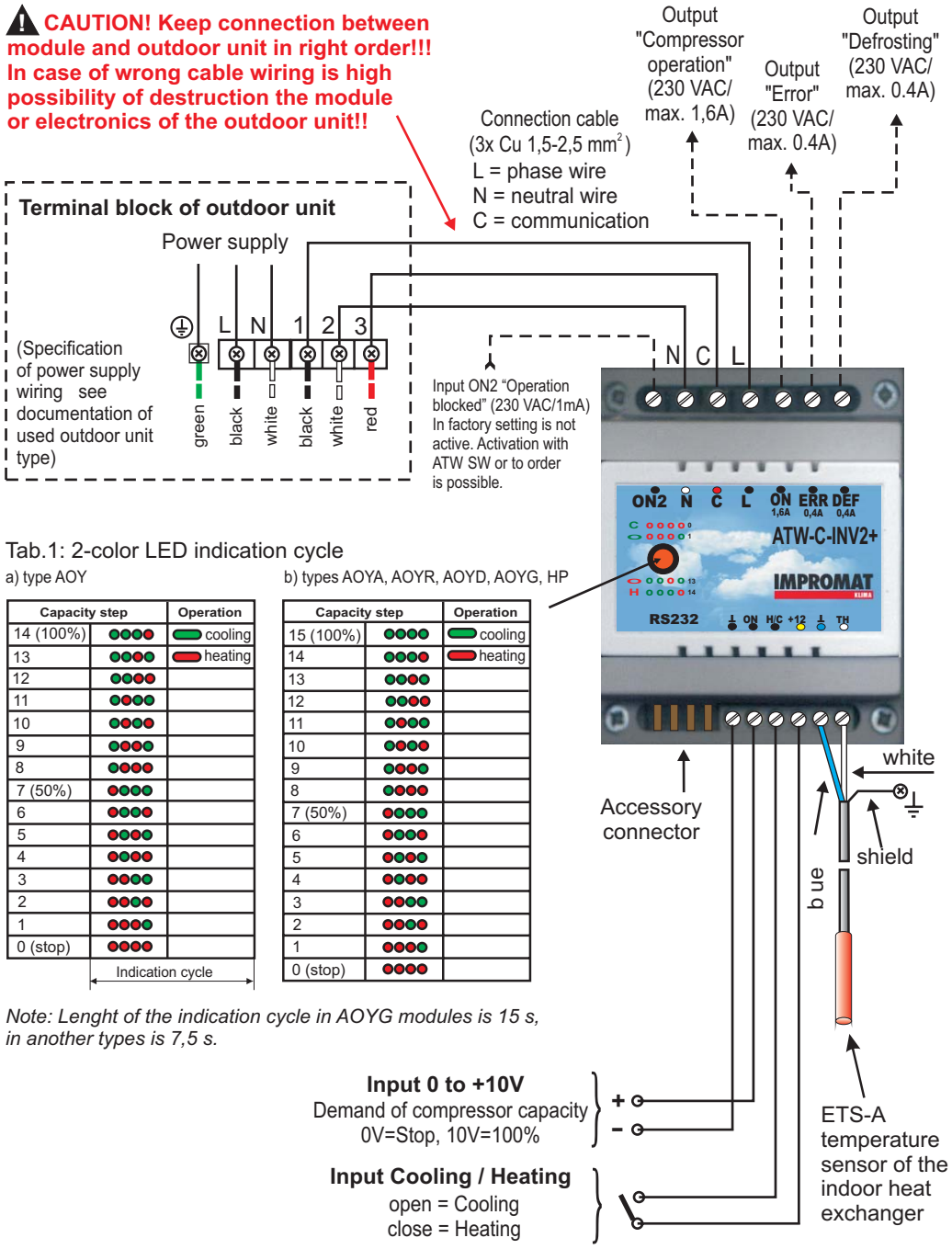
On enclosed scheme can be find general wiring of the supplied module. Detailed specification of inputs and outputs and possibility of their use are in the Technical Manual.

⚠ **WARNING!**

- Be careful!! Connecting wires between the module and outdoor unit must not be confused!! Possible destruction of the module and electronics of the outdoor unit !!!
- Power and communication terminal of the module must not be used for power supply of the outdoor unit!!
- The Module may be power supply only from outdoor unit to which is communicatively connected. Power supply from another source is unacceptable. If the outdoor unit doesn't have separate terminal for indoor unit connection, please use connection over fuse terminal of the outdoor unit. If is not possible power supply module from outdoor unit or in case of request of separated power supply circuits, then is necessary use optical separating modules ATW-FIN / ATW-FOUT.

Basic circuit for cooling and heating applications

⚠ CAUTION! Keep connection between module and outdoor unit in right order!!! In case of wrong cable wiring is high possibility of destruction the module or electronics of the outdoor unit!!


Output "Compressor operation" (230 VAC/ max. 1,6A)
Output "Error" (230 VAC/ max. 0.4A)
Output "Defrosting" (230 VAC/ max. 0.4A)
Connection cable (3x Cu 1,5-2,5 mm²)
L = phase wire
N = neutral wire
C = communication
Terminal block of outdoor unit
Power supply
L N 1 2 3
green black white black white red
(Specification of power supply wiring see documentation of used outdoor unit type)
Input ON2 "Operation blocked" (230 VAC/1mA) In factory setting is not active. Activation with ATW SW or to order is possible.
N C L
ON2 N C L ON ERR DEF
ATW-C-INV2+
IMPROMAT
RS232
Accessory connector
white
shield
blue
Input 0 to +10V
Demand of compressor capacity
0V=Stop, 10V=100%
+
–
Input Cooling / Heating
open = Cooling
close = Heating
ETS-A temperature sensor of the indoor heat exchanger

Tab.1: 2-color LED indication cycle

a) type AOY

Capacity step		Operation
14 (100%)	●●●●	cooling
13	●●●●	heating
12	●●●●	
11	●●●●	
10	●●●●	
9	●●●●	
8	●●●●	
7 (50%)	●●●●	
6	●●●●	
5	●●●●	
4	●●●●	
3	●●●●	
2	●●●●	
1	●●●●	
0 (stop)	●●●●	

Indication cycle

b) types AOYA, AOYR, AOYD, AOYG, HP

Capacity step		Operation
15 (100%)	●●●●	cooling
14	●●●●	heating
13	●●●●	
12	●●●●	
11	●●●●	
10	●●●●	
9	●●●●	
8	●●●●	
7 (50%)	●●●●	
6	●●●●	
5	●●●●	
4	●●●●	
3	●●●●	
2	●●●●	
1	●●●●	
0 (stop)	●●●●	

Note: Lenght of the indication cycle in AOYG modules is 15 s, in another types is 7,5 s.

INSTALLATION OF TEMPERATURE SENSOR ETS-A

Usage of the temperature sensor is necessary for correct module function. Please follow this instruction during the installation:

- Location and way of sensor installation must ensure perfect thermal contact with sensed surface - for example, location in the housing, fixed with sleeve or thermally conductive sealant.
- Sensor must be isolated from the influence of the surrounding air temperature (eg. by suitable temperature insulation).
- Sensor must be always electrically connected with the module. Module doesn't work without connected sensor.
- It is necessary to meet correct electrical polarity of the sensor. This can be ensured by the connection of the color-coded sensor wires to the same color-coded terminals of the module. Module doesn't work with sensor which is wrongly connected!
- Keep cable shield connection of the sensor to the device chassis or the switch box.
- The maximum cable length of the sensor ETS-A is 10m. If you need extend original cable please follow no current grounding principles to avoid current loops.
- If is cable over 2m long and if is located in environment with electromagnetic interference, then we recommend to use Anti-EMI ferrite elements with minimum impedance 150 Ohm/100MHz (for example type CF4A, 742 712 21, etc.).

Sensor location:

- Sensor in systems which are used only for cooling should be placed on the coldest part of the evaporator or on refrigerant return pipe (gas pipe).
- For air exchangers with cooling and heating functions is best sensor location approximately in the middle of the tube exchanger lenght.

In heat pumps air to water is sensor location dependant on the structural design:

- For plate heat exchanger is suitable placed sensor to his lower part. Right in the middle between water inlet and liquid refrigerant outlet.
- In the case of the coil heat exchanger which is integrated into storage tank, place sensor inside the housing in order to reach bottom of the spiral heat exchanger.

USING OF EXTERNAL OUTPUTS:

- Outputs ON, DEF and ERR are a SSR (Solid State Relay) type. It can be used to the status indication or to power supply the power elements (with regard to the maximum allowable output current).

Note: *In some particular type of relay connected to external outputs, the big inductance of the coils can cause unreliable feature of these switches. Avoid this incidents, please use relay with integrated overvoltage protection or integrated rectifier, for example ELKO EP VS116(308,316)K, TeSys LC7-K06, FINDER coupler 3851 etc. For purposes of signalization and indication can be also used module ATW-IRU.*